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NC DENR
Division of Waste Management - Solid Waste

Environmental Monitoring Reporting Form

Notice: This form and any information attached to it are "Public Records" as defined in NC General Statute 132-1. As such, these documents are available for inspection and examination by any person upon request (NC General Statute 132-6).

Instructions:

- **Prepare one form for each individually monitored unit.**
- **Please type or print legibly.**
- Attach a notification table with values that attain or exceed NC 2L groundwater standards or NC 2B surface water standards. The notification must include a preliminary analysis of the cause and significance of each value. (e.g. naturally occurring, off-site source, pre-existing condition, etc.).
- Attach a notification table of any groundwater or surface water values that equal or exceed the reporting limits.
- Attach a notification table of any methane gas values that attain or exceed explosive gas levels. This includes any structures on or nearby the facility (NCAC 13B .1629 (4)(a)(i).
- In accordance with NC General Statutes Chapter 89C and 89E and NC Solid Waste Management Rules 15A NCAC 13B, be sure to affix a seal to the bottom of this page, when applicable.
- Send the original signed and sealed form, any tables, and Electronic Data Deliverable to: Compliance Unit, NCDENR-DWM, Solid Waste Section, 1646 Mail Service Center, Raleigh, NC 27699-1646.

Solid Waste Monitoring Data Submittal Information

Name of entity submitting data (laboratory, consultant, facility owner):

Municipal Engineering Services Co., P.A.

Contact for questions about data formatting. Include data preparer's name, telephone number and E-mail address:

Name: Jonathan Pfohl Phone: (919) 772-5393

E-mail: jpfohl@mesco.com

Facility name:	Facility Address:	Facility Permit #	NC Landfill Rule: (.0500 or .1600)	Actual sampling dates (e.g., October 20-24, 2006)
Greene County Closed Unlined MSWLF and Active C&D Landfill	105 Landfill Road (SR1239) Walstonburg, NC 27888	40-02	.1600	March 28, 2008

Environmental Status: (Check all that apply)

☐ Initial/Background Monitoring ☐ Detection Monitoring ☒ Assessment Monitoring ☐ Corrective Action

Type of data submitted: (Check all that apply)

☒ Groundwater monitoring data from monitoring wells
☐ Groundwater monitoring data from private water supply wells
☐ Leachate monitoring data
☒ Surface water monitoring data
☐ Methane gas monitoring data
☐ Corrective action data (specify)
☐ Other(specify)

Notification attached?

☐ No. No groundwater or surface water standards were exceeded.
☒ Yes, a notification of values exceeding a groundwater or surface water standard is attached. It includes a list of groundwater and surface water monitoring points, dates, analytical values, NC 2L groundwater standard, NC 2B surface water standard or NC Solid Waste GWPS and preliminary analysis of the cause and significance of any concentration.
☐ Yes, a notification of values exceeding an explosive methane gas limit is attached. It includes the methane monitoring points, dates, sample values and explosive methane gas limits.

Certification

To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. Furthermore, I have attached complete notification of any sampling values meeting or exceeding groundwater standards or explosive gas levels, and a preliminary analysis of the cause and significance of concentrations exceeding groundwater standards. I am aware that there are significant penalties for making any false statement, representation, or certification including the possibility of a fine and imprisonment.

Jonathan Pfohl	Environmental Specialist	(919) 772-5393
Facility Representative Name (Print)	Title	(Area Code) Telephone Number
Signature	6/10/08 Date	Affix NC Licensed/ Professional Geologist/Engineer Seal here:

Revised 01/2007

Groundwater Sampling Report and Statistical Analysis

Prepared for

Greene County Closed MSWLF and Active C&D Landfill
Walstonburg, North Carolina

March, 2008

Permit Number: 40-02
MESCO Project Number: G08010.0

Completed on June 10, 2008

Municipal Engineering Services Company, P.A.
Garner, Boone and Morehead City, North Carolina

OPERATION/CONSTRUCTION MANAGERS

Municipal Services

CIVIL/SANITARY ENGINEERS

Engineering Company, P.A.

June 9, 2008

Ms. Jaclynne Drummond
Solid Waste Section
Division of Waste Management
North Carolina Department of Environment and Natural Resources
401 Oberlin Road, Suite 150
Raleigh, NC 27605

Re: Groundwater Sampling Report and Statistical Analysis
Greene County Closed unlined MSWLF and Active C&D Landfill
Permit No. 40-02
MESCO Project No. G08010.0

Dear Ms. Drummond:

The groundwater and surface waters surrounding the Greene County Closed Unlined MSWLF and active C&D Landfill located in Walstonburg NC were sampled and analyzed by Environment I of Greenville NC as part of the routine semi-annual assessment monitoring program on March 28, 2008. All of the C&D landfill monitoring wells were sampled including 2 new downgradient wells MW-7 and MW-8 which were installed in June 2007. The surface water monitoring location Upstream was reported to be dry but a sample was obtained from the other surface water location labeled "Downstream".

All of the monitoring wells were analyzed for the C&D parameter list as outlined in 15A NCAC 13B.0544 (D). The new parameter list includes, mercury, specific conductance, pH, temperature, alkalinity, total dissolved solids, chloride, manganese, sulfate, and iron in addition to the complete Appendix I list of VOCs and total metals. Environment 1 reported all results utilizing the Method Detection Limits (MDL) with reference to the Solid Waste Section reporting limits (SWSL). All detected constituents were analyzed for regulatory exceedance with reference to the North Carolina Groundwater Standards (NCGW2L) and the Solid Waste Section implemented Ground Water Protection (GWP) Standards. The results are shown in the enclosed tables titled "Detection Scan". The following tables summarize those metal constituents that exceeded the NCGW2L Standard and all of the VOCs detected above the SWSL or NCGW2L Standard during this monitoring event.

Table 1. NCGW2L Exceedance Summary (Total Metals)

Well	Lead	Iron	Mn	Cumulative
MW-4		2830	137	2967
MW-5		3218		3218
MW-6		657		657
MW-7	*763*	963		1726
Total	763	7668	137	8568

Italicized indicates detected above own respective historical identified range concentration (uq/L)

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PO Box 828, Morehead City, NC 28557 (252) 726-9481 PO Box 349, Boone, North Carolina 28607 (828) 262-1767

Inorganic constituents (total metals) continue to be detected within all of the monitoring locations in concentrations above the SWSL with the exception of MW-8, and the Downstream surface water. Six (6) of the eighteen analyzed metals were detected with only concentrations of lead within MW-7 found outside of their respective historical identified ranges. Concentrations of lead within MW-7 were found to be extremely high during this event but should be considered a potential "outlier". The C&D parameter total iron was detected in elevated concentrations within all of the downgradient wells during this event.

Table 2. Detection Summary (VOCs)

Well	Aromatics		CAH's		Cumulative		
	Benzene	1,4-DCB	cis1,2-DCE	VCM	Total	Maximum Total in a Single Historical Event	Current Historical Percentile
MW-4	**2.2**	***3.9***	10.2	**4.7**	21	34.4	36.6
MW-5				***0.40***[j]	0.40[j]	0.40[j]	100
Total	2.2	3.9	10.2	5.1	21.4	34.7	76.2

BOLD indicates detected in exceedance of NCGW2L Standard. *Italicized* indicates found above own respective historical identified range. "j" <SWSL therefore estimated concentration concentration (uq/L)

Downgradient monitoring well MW-4 was the only monitoring location found to contain VOC detections above the SWSL during this sampling event. Monitoring well MW-4 continues to contain a mixture of dissolved phase aromatic hydrocarbons 1,4-DCB and the chlorinated aliphatic hydrocarbon (CAH) intermediate cis-1,2-dichloroethene along with their common biodegradation byproducts. An unprecedented detection of the daughter product vinyl chloride in a concentration barely above the NCGW2L but below the SWSL was found within MW-5. Vinyl Chloride within MW-5 is a "J" qualifier therefore the concentration is an estimate. Generally all of the detected VOCs are not grossly elevated, typical of contaminants commonly found in groundwater at MSWLF facilities and the source is likely attributed to leachate and or landfill gas (LFG) that originated from the closed unlined landfill. The presence of degradation byproducts and distribution of limited geochemical parameters indicate that natural attenuation of the groundwater is very likely occurred.

Sitewide cumulative quantifiable VOC concentrations were found at 21.4 ug/L or above the 76 percentile indicating that the current VOC concentrations are consistent with historical data. Results of temporal trend analysis at a 95% confidence level through Sen's Slope Estimator and Mann Kendall analysis indicate that the site-wide cumulative VOC concentrations have increased since VOCs began to be detected within MW-4 in 2005.

MESCO also completed the statistical analysis as required by the Solid Waste Section. The purpose of these analyses is to determine, in comparison to background levels, statistical significance of the Appendix I constituents detected within the downgradient wells during the March 2008 sampling event.

Statistical Analysis Methodology

Metals

An inter-well statistical analysis was conducted upon metals detected during this sampling event. Since C&D Landfills are not required to complete statistical analysis and there is very limited historical data iron and manganese were were omitted from this analysis. Monitoring well MW-1R was defined as the background well, and an upper tolerance limit (UTL) with 95% coverage was computed for each detected constituent from the background data at a 95% level of confidence. For each tested constituent, an appropriate statistical analysis method was selected based on the percentages of non-detects (%ND) in the historical background data. The following table (Table 3) summarizes the methods used for four different %ND ranges.

Table 3. Statistical Analysis Methods for Various %ND Ranges

%ND	Analysis Method	ND Substitution
%ND<15%	Parametric tolerance limit	1/2 ND
15%<%ND<50%	Parametric tolerance limit	Cohen or 1/2 ND
50%<%ND<90%	Non-parametric tolerance limit	1/2 ND
90%<%ND	Poisson tolerance limit	-

NOTE: For parametric tolerance interval, normality of the background data was checked by the Shapiro-Wilks normality test, as the method requires that the data be normally distributed.

A preliminary data screening was conducted upon the metals detected in all monitoring locations. Detected metals with concentrations found below that of the background well MW-1R and below the SWSL were censored and a statistical analysis was not conducted upon these wells. A total of 2 metals were tested for statistical significance. For lead and zinc within MW-7 the non-parametric tolerance limit method was utilized since the background data was not normally distributed.

Data distributions were reviewed using box and whiskers plots. In order to evaluate variability in concentrations with respect to time and season, time series plots were generated for all of the analytes detected above the NCGW2L. Time series plots were also visually evaluated for seasonality and "outliers" (defined as data that appears to be incongruent with respect to historical results). The results of the Dixon's test for outliers indicate that the detected concentration of lead within MW-7 is an outlier. No apparent Seasonality was found in the latest data record.

Intrawell Analyses

In general, intrawell analysis is conducted in order to attempt to differentiate true contamination from spatial variability. Baseline levels in this context are defined as the background level derived from the data in a given downgradient well. Intrawell analyses through Shewhart-CUSUM control charts require a minimum of eight independent historical sampling events and a detection rate greater than 25% (%ND≤75%). Due to the lack of historical sampling events Shewhart-CUSUM control charts could not be developed for lead within MW-7.

VOCs

All historical VOC detections in the background well MW-1R was pooled in order to determine the total number of detections, from which the expected number of detections in a single down gradient monitoring point (y^*) was derived by utilizing the Poisson prediction interval. The parameter $y^*$is defined by the following equation:

$$y^* = cy + \frac{t^2 c}{2} + tc\sqrt{y\left(1+\frac{1}{c}\right)+\frac{t^2}{4}}$$

where

c = 1/ n (n =number of background samples)
t = one-sided value of students t -Statistic at 95% confidence [a]
y = number of events observed in n previous samples
y^* = expected number of events in a single future sample

[a] Gibbons, R.D., 1994, Statistical methods for groundwater monitoring: John Wiley & Sons, Inc., p.12.

For each monitoring location showing any VOC detections, the number of detected VOCs was counted with each detection being considered a "hit". The number was then compared with the expected number of detections derived from the background VOC data. The value of Student's t -Statistic was derived from tabulated values included in Gibbons (1994).

Results

Lead within MW-7 was the only metal found in a concentration in exceedance of the NCGW2L and in a calculated statistically significant increase through inter-well analysis. However, the extreme magnitude of the concentration without previous detections within MW-7 and review well MW-4 coupled with the findings of the Dixon's test of outliers indicate that the concentration of lead within MW-7 may be a false positive.

Based upon the complete lack of historical VOC detections within the background well every well that contained a single VOC detection is considered to be statistically significant according to the Poisson Prediction Interval at a 95% confidence level. Therefore downgradient well MW-4 continues to be the only well sitewide to contain statistically significant VOC detections. All VOCs detected within MW-4 with the exception of 1,4-DCB were found within their respective historical identified range. The cumulative VOC concentration during this event falls within the 37 percentile indicating that groundwater quality has not deteriorated when compared to previous events. MW-4 was previously sampled for the full Appendix II list of parameters in May 2007 with no constituents found other than those found within the Appendix I list.

Conclusion

Downgradient well MW-4 has consistently been found to contain statistically significant VOCs at a 95% confidence levels since March 2005. Given the observed low concentrations, the inferred direction of flow, and very slow calculated flow rates it is unlikely that the VOCs would be found in concentrations above the Standard at the compliance boundary. Further the 2 newly installed wells MW-7 and MW-8 downgradient of MW-4 have been found to lack VOC detections indicating that the plume is very likely isolated to the aquifer nearest the waste boundary. The impacted aquifer monitored by MW-4 was further investigated and the findings were submitted in the formal Assessment of Corrective Measures (ACM) report on August 30, 2007. The ACM report which was approved by the Section on November 1, 2007 recommended that Monitored Natural Attenuation (MNA) would be the most viable remediation alternative. The required public meeting has been held and the Corrective Action Plan (CAP) is being developed which will be submitted to the Section for approval. A revised Sampling & Analysis Plan which will likely entail additional parameters in order to better determine the extent and rate of MNA will also be submitted to the Section.

MESCO completed the enclosed potentiometric map with groundwater elevations on the day of sampling, flow rates and direction. The site is scheduled to be sampled again for the Appendix I list of parameters and likely implementation of the new parameters outlined in the revised SAP in September 2008. Please contact me either by phone at (919) 772-5393, or by email at jpfohl@mesco.com should you have any questions or concerns regarding this report.

Sincerely,

MUNICIPAL ENGINEERING SERVICES CO., P.A.

Jonathan Pfohl
Environmental Specialist

Enclosures
cc: Mr. David Jones
Greene County

Detection Scan All Detections above SWSL, GWP, and NCGW2L
Greene County Closed MSWLF and C&D Landfill

Well ID	Parameter Name [1]	Sample Date	Result	Unit	MDL [4]	SWSL [2]	NCGW2L [3]	GWP [5]	Exceedance	Preliminary Cause
MW-1R	Barium	3/28/08	171	ug/l	0.11	100	2000			
MW-4	**1,4-Dichlorobenzene**	**3/28/08**	**3.9**	**ug/l**	**0.21**	**1**	**1.4**		**2.5**	**Leachate &/or LFG**
MW-4	**Benzene**	**3/28/08**	**2.2**	**ug/l**	**0.16**	**1**	**1**		**1.2**	**Leachate &/or LFG**
MW-4	Cis-1,2-Dichloroethene	3/28/08	10.2	ug/l	0.14	5	70			
MW-4	**Iron**	**3/28/08**	**27830**	**ug/l**	**14.0**	**300**	**300**		**27530**	
MW-4	**Manganese**	**3/28/08**	**137**	**ug/l**	**0.50**	**50**	**50**		**87**	**Natural**
MW-4	**Vinyl Chloride**	**3/28/08**	**4.7**	**ug/l**	**0.34**	**1**	**0.015**		**4.685**	**Leachate &/or LFG**
MW-5	**Iron**	**3/28/08**	**3218**	**ug/l**	**14.0**	**300**	**300**		**2918**	**Natural**
MW-5	**Vinyl Chloride**	**3/28/08**	**0.4**	**ug/l**	**0.34**	**1**	**0.015**		**0.385**	**Leachate &/or LFG**
MW-6	**Iron**	**3/28/08**	**657**	**ug/l**	**14.0**	**300**	**300**		**357**	**Natural**
MW-7	**Iron**	**3/28/08**	**963**	**ug/l**	**14.0**	**300**	**300**		**663**	**Natural**
MW-7	**Lead**	**3/28/08**	**763***	**ug/l**	**0.04**	**10**	**15**		**748**	**Natural &/or outlier**
MW-7	**Vanadium**	**3/28/08**	**7.1**	**ug/l**	**1.21**	**25**		**3.5**	**3.6**	
MW-7	Zinc	3/28/08	17	ug/l	1.86	10	1050			

[1] Table only contains detected constituents

[2] SWSL = Solid Waste Section Reporting Limit (Current as of Sampling Event)

[3] NCGW2L = North Carolina Ground Water 2L Standard

[4] MDL = Method Detection Limit

[4] GWP = Groundwater Protection Standard (Current as of Sampling Event)

LFG = Landfill Gas

NE = Not Established

*=Detected Concentration of lead within MW-7 determined to be an outlier via Dixon's test for outliers.

Detection Scan All Detections Reported by Laboratory
Greene County Closed MSWLF and C&D Landfill

Well ID	Parameter Name [1]	Sample Date	Result	Unit	MDL [4]	SWSL [2]	NCGW2L [3]	GWP [5]	Exceedance	Preliminary Cause
MW-1R	Acetone	03/28/2008	4.8	ug/l	1.21	100	700			
MW-1R	Barium	03/28/2008	171	ug/l	0.11	100	2000			
MW-1R	Beryllium	03/28/2008	0.3	ug/l	0.06	1		2		
MW-1R	Cadmium	03/28/2008	0.2	ug/l	0.04	1	1.75			
MW-1R	Chloride	03/28/2008	326000	ug/l	5.0	5	250000000			
MW-1R	Cobalt	03/28/2008	0.7	ug/l	0.03	10		70		
MW-1R	Copper	03/28/2008	1.4	ug/l	0.05	10	1000			
MW-1R	Iron	03/28/2008	97	ug/l	14.0	300	300			
MW-1R	Lead	03/28/2008	1.4	ug/l	0.04	10	15			
MW-1R	Manganese	03/28/2008	39	ug/l	0.50	50	50			
MW-1R	Nickel	03/28/2008	1.8	ug/l	1.35	50	100			
MW-1R	Selenium	03/28/2008	0.4	ug/l	0.14	10	50			
MW-1R	TDS	03/28/2008	264000	ug/l	1.0	1	500000			
MW-1R	Thallium	03/28/2008	0.2	ug/l	0.04	5		0.28		
MW-1R	Vanadium	03/28/2008	0.6	ug/l	1.21	25		3.5		
MW-1R	Zinc	03/28/2008	8.6	ug/l	1.86	10	1050			
MW-4	1,1-Dichloroethane	03/28/2008	2	ug/l	0.16	5	70			
MW-4	**1,4-Dichlorobenzene**	**03/28/2008**	**3.9**	**ug/l**	**0.21**	**1**	**1.4**		**2.5**	**Leachate &/or LFG**
MW-4	Acetone	03/28/2008	9.7	ug/l	1.21	100	700			
MW-4	Arsenic	03/28/2008	2.5	ug/l	0.07	10	50			
MW-4	Barium	03/28/2008	35.1	ug/l	0.34	100	2000			
MW-4	**Benzene**	**03/28/2008**	**2.2**	**ug/l**	**0.16**	**1**	**1**		**1.2**	**Leachate &/or LFG**
MW-4	Beryllium	03/28/2008	0.1	ug/l	0.17	1		2		
MW-4	Cadmium	03/28/2008	0.2	ug/l	0.04	1	1.75			
MW-4	Chloride	03/28/2008	19000	ug/l	5.0	5	250000000			
MW-4	Chlorobenzene	03/28/2008	0.8	ug/l	0.13	3	50			
MW-4	Chloroethane	03/28/2008	9.2	ug/l	0.29	10	2800			
MW-4	Cis-1,2-Dichloroethene	03/28/2008	10.2	ug/l	0.14	5	70			
MW-4	Cobalt	03/28/2008	1.3	ug/l	2.53	10		70		
MW-4	Copper	03/28/2008	1	ug/l	2.24	10	1000			
MW-4	Ethylbenzene	03/28/2008	0.3	ug/l	0.16	1	550			
MW-4	**Iron**	**03/28/2008**	**27830**	**ug/l**	**14.0**	**300**	**300**		**27530**	
MW-4	Lead	03/28/2008	0.8	ug/l	0.04	10	15			
MW-4	**Manganese**	**03/28/2008**	**137**	**ug/l**	**0.50**	**50**	**50**		**87**	**Natural**
MW-4	Methylene Chloride	03/28/2008	0.7	ug/l	0.14	1	4.6			
MW-4	Nickel	03/28/2008	1.2	ug/l	1.35	50	100			
MW-4	Selenium	03/28/2008	0.9	ug/l	0.14	10	50			
MW-4	Sulfate	03/28/2008	6300	ug/l	5000	250000	250000			
MW-4	TDS	03/28/2008	137000	ug/l	1.0	1	500000			
MW-4	Thallium	03/28/2008	0.1	ug/l	0.04	5		0.28		
MW-4	Total Alkalinity	03/28/2008	85000	ug/l	1.0	1		NE		
MW-4	Trichloroethene	03/28/2008	0.4	ug/l	0.13	1	2.8			
MW-4	Vanadium	03/28/2008	2.3	ug/l	1.21	25		3.5		
MW-4	**Vinyl Chloride**	**03/28/2008**	**4.7**	**ug/l**	**0.34**	**1**	**0.015**		**4.685**	**Leachate &/or LFG**
MW-4	Zinc	03/28/2008	5	ug/l	1.86	10	1050			

Well ID	Parameter Name [1]	Sample Date	Result	Unit	MDL [4]	SWSL [2]	NCGW2L [3]	GWP [5]	Exceedance	Preliminary Cause
MW-5	1,1-Dichloroethane	03/28/2008	0.3	ug/l	0.16	5	70			
MW-5	Acetone	03/28/2008	4.9	ug/l	1.21	100	700			
MW-5	Arsenic	03/28/2008	0.1	ug/l	0.07	10	50			
MW-5	Barium	03/28/2008	24	ug/l	0.34	100	2000			
MW-5	Benzene	03/28/2008	0.3	ug/l	0.16	1	1			
MW-5	Beryllium	03/28/2008	0.1	ug/l	0.17	1		2		
MW-5	Cadmium	03/28/2008	0.1	ug/l	0.04	1	1.75			
MW-5	Chloride	03/28/2008	41000	ug/l	5.0	5	250000000			
MW-5	Chloroethane	03/28/2008	1	ug/l	0.29	10	2800			
MW-5	Cis-1,2-Dichloroethene	03/28/2008	1.5	ug/l	5.0	250	70			
MW-5	Cobalt	03/28/2008	0.4	ug/l	2.53	10		70		
MW-5	Copper	03/28/2008	0.2	ug/l	2.24	10	1000			
MW-5	**Iron**	**03/28/2008**	**3218**	**ug/l**	**14.0**	**300**	**300**		**2918**	**Natural**
MW-5	Lead	03/28/2008	0.3	ug/l	0.04	10	15			
MW-5	Manganese	03/28/2008	19	ug/l	0.50	50	50			
MW-5	Nickel	03/28/2008	0.5	ug/l	1.35	50	100			
MW-5	TDS	03/28/2008	41000	ug/l	1.0	1	500000			
MW-5	Vanadium	03/28/2008	0.9	ug/l	1.21	25		3.5		
MW-5	**Vinyl Chloride**	**03/28/2008**	**0.4**	**ug/l**	**0.34**	**1**	**0.015**		**0.385**	**Leachate &/or LFG**
MW-5	Zinc	03/28/2008	3.4	ug/l	1.86	10	1050			
MW-6	Acetone	03/28/2008	3.6	ug/l	1.21	100	700			
MW-6	Barium	03/28/2008	11.6	ug/l	0.34	100	2000			
MW-6	Beryllium	03/28/2008	0.1	ug/l	0.17	1		2		
MW-6	Chloride	03/28/2008	25500	ug/l	5.0	5	250000000			
MW-6	Cobalt	03/28/2008	0.1	ug/l	2.53	10		70		
MW-6	Copper	03/28/2008	0.2	ug/l	2.24	10	1000			
MW-6	**Iron**	**03/28/2008**	**657**	**ug/l**	**14.0**	**300**	**300**		**357**	**Natural**
MW-6	Lead	03/28/2008	0.3	ug/l	0.04	10	15			
MW-6	Manganese	03/28/2008	10	ug/l	0.50	50	50			
MW-6	Nickel	03/28/2008	0.2	ug/l	1.35	50	100			
MW-6	TDS	03/28/2008	66000	ug/l	1.0	1	500000			
MW-6	Vanadium	03/28/2008	1.2	ug/l	1.21	25		3.5		
MW-6	Zinc	03/28/2008	2.7	ug/l	1.86	10	1050			
MW-7	2-Butanone	03/28/2008	1.3	ug/l	0.85	100	4200			
MW-7	Acetone	03/28/2008	4.3	ug/l	1.21	100	700			
MW-7	Antimony	03/28/2008	0.9	ug/l	0.08	6		1.4		
MW-7	Arsenic	03/28/2008	1.4	ug/l	0.07	10	50			
MW-7	Barium	03/28/2008	47.5	ug/l	0.34	100	2000			
MW-7	Beryllium	03/28/2008	0.2	ug/l	0.17	1		2		
MW-7	Cadmium	03/28/2008	0.1	ug/l	0.04	1	1.75			
MW-7	Chloride	03/28/2008	31000	ug/l	5.0	5	250000000			
MW-7	Chromium	03/28/2008	4.7	ug/l	1.38	10	50			
MW-7	Cobalt	03/28/2008	0.9	ug/l	2.53	10		70		
MW-7	Copper	03/28/2008	6.3	ug/l	2.24	10	1000			
MW-7	**Iron**	**03/28/2008**	**963**	**ug/l**	**14.0**	**300**	**300**		**663**	**Natural**
MW-7	**Lead**	**03/28/2008**	**763***	**ug/l**	**0.04**	**10**	**15**		**748**	**Natural &/or outlier**
MW-7	Manganese	03/28/2008	15	ug/l	0.50	50	50			
MW-7	Nickel	03/28/2008	13	ug/l	1.35	50	100			

Well ID	Parameter Name [1]	Sample Date	Result	Unit	MDL [4]	SWSL [2]	NCGW2L [3]	GWP [5]	Exceedance	Preliminary Cause
MW-7	TDS	03/28/2008	42000	ug/l	1.0	1	500000			
MW-7	Thallium	03/28/2008	0.1	ug/l	0.04	5		0.28		
MW-7	**Vanadium**	**03/28/2008**	**7.1**	**ug/l**	**1.21**	**25**		**3.5**	**3.6**	
MW-7	Zinc	03/28/2008	17	ug/l	1.86	10	1050			
MW-8	Acetone	03/28/2008	5.4	ug/l	1.21	100	700			
MW-8	Barium	03/28/2008	37.8	ug/l	0.11	100	2000			
MW-8	Beryllium	03/28/2008	0.1	ug/l	0.06	1		2		
MW-8	Chloride	03/28/2008	40000	ug/l	5.0	5	250000000			
MW-8	Chloroform	03/28/2008	0.4	ug/l	0.13	5	70			
MW-8	Cobalt	03/28/2008	0.4	ug/l	0.03	10		70		
MW-8	Copper	03/28/2008	0.3	ug/l	0.05	10	1000			
MW-8	Iron	03/28/2008	56	ug/l	14.0	300	300			
MW-8	Lead	03/28/2008	0.8	ug/l	0.04	10	15			
MW-8	Mercury	03/28/2008	0.01	ug/l	0.13	0.2	1.1			
MW-8	Nickel	03/28/2008	0.4	ug/l	1.35	50	100			
MW-8	TDS	03/28/2008	42000	ug/l	1.0	1	500000			
MW-8	Thallium	03/28/2008	0.2	ug/l	0.04	5		0.28		
MW-8	Vanadium	03/28/2008	0.6	ug/l	1.21	25		3.5		
MW-8	Zinc	03/28/2008	1.7	ug/l	1.86	10	1050			
Downstream	1,2-Dichloropropane	03/28/2008	0.2	ug/l	0.17	1	0.51			
Downstream	Acetone	03/28/2008	5.5	ug/l	1.21	100	700			
Downstream	Arsenic	03/28/2008	0.7	ug/l	0.07	10	50			
Downstream	Barium	03/28/2008	25.5	ug/l	0.34	100	2000			
Downstream	Cadmium	03/28/2008	0.2	ug/l	0.04	1	1.75			
Downstream	Chromium	03/28/2008	0.6	ug/l	1.38	10	50			
Downstream	Cobalt	03/28/2008	0.3	ug/l	2.53	10		70		
Downstream	Copper	03/28/2008	1.2	ug/l	2.24	10	1000			
Downstream	Lead	03/28/2008	0.9	ug/l	0.04	10	15			
Downstream	Nickel	03/28/2008	0.7	ug/l	1.35	50	100			
Downstream	Thallium	03/28/2008	0.1	ug/l	0.04	5		0.28		
Downstream	Toluene	03/28/2008	0.2	ug/l	0.13	1	1000			
Downstream	Vanadium	03/28/2008	2.6	ug/l	1.21	25		3.5		
Downstream	Zinc	03/28/2008	6.6	ug/l	1.86	10	1050			
EB	Barium	03/28/2008	0.2	ug/l	0.11	100	2000			
EB	Copper	03/28/2008	0.2	ug/l	0.05	10	1000			
EB	Iron	03/28/2008	31	ug/l	14.0	300	300			
EB	Nickel	03/28/2008	0.1	ug/l	1.35	50	100			
EB	Vanadium	03/28/2008	0.8	ug/l	1.21	25		3.5		
EB	Zinc	03/28/2008	5.8	ug/l	1.86	10	1050			

[1] Table only contains detected constituents

[2] SWSL = Solid Waste Section Reporting Limit (Current as of Sampling Event)

[3] NCGW2L = North Carolina Ground Water 2L Standard

[4] MDL = Method Detection Limit

[4] GWP = Groundwater Protection Standard (Current as of Sampling Event)

LFG = Landfill Gas

NE = Not Established

Hydrologic Properties at Monitoring Well Locations
Greene County Closed MSWLF and C&D Landfill

Monitoring Well	Hydraulic Conductivity (cm/sec)	Effective Porosity (%)	Hydraulic Gradient	Flow Rate (ft/yr)	Flow Direction	Water Table Depth (ft)	Water Table Elev. (ft)
MW-1R	1.20E-04	37%	0.020	6.8	N22E	5.13	116.65
MW-4	1.10E-04	40%	0.006	1.6	N58E	16.91	100.98
MW-5	1.40E-04	37%	0.056	21.9	N83E	18.03	97.73
MW-6	1.90E-04	43%	0.035	16.1	N17E	5.42	111.99
MW-7	1.98E-04	7%	0.033	95.4	S45E	13.02	97.46
MW-8	1.14E-03	7%	0.029	486.6	S12E	9.77	101.59

NOTE: Data for hydraulic conductivities obtained from GAI Consultants' Water Quality Modifications (October, 1994)

Hydrologic Gradient taken from the March 28, 2008 sampling event.

Flow rate (Q) is defined by the equation:

where $$Q = -\frac{K}{n_e} \cdot \frac{dh}{dl}$$

K= hydraulic conductivity
n_e = effective porosity
dh= head difference
dl= horizontal distance

Statistical Analysis Results Summary

Inter-Well Analysis Summary
Greene County Closed Sanitary Landfill
Background Well: (MW-1R)

Lead, total

%ND	Normality	Method	ND Adj.	Upper Limit (a = 95%)	Unit
66.67	-	Non-Parametric Tolerance interval	1/2ND	32	ug/L

Well	Result	Significance
MW-7	763	Yes

Zinc, total

%ND	Normality	Method	ND Adj.	Upper Limit (a = 95%)	Unit
83.33	-	Non-Parametric Tolerance interval	1/2ND	103	ug/L

Well	Result	Significance
MW-7	17	no

NOTE: Bold-faced monitoring points indicate detected levels exceed NCGW2L Standard

Intra-Well Analysis Summary (Metals)
Greene County Closed Sanitary Landfill

Well	Lead*
MW-7	n/a

EXPLANATION

yes=detection statistically significant by intrawell analysis

no=detection not statistically significant by intrawell analysis

n/a=unable to run intrawell analysis due to insufficient sampling events

Bold=Detected in exceedance of the Standard

*=Detected Concentration of lead determined to be an outlier via Dixon's test for outliers.

Unable to Determine If Metals have increased in concentration per Intra-Well Analysis

Summary of Pooled Appendix I VOCs in Background Well (MW-1R)
Greene County Closed Sanitary Landfill

Constituent	Samples	NDs	% NDs
1,1,1,2-Tetrachloroethane	30	30	100.00
1,1,1-Trichloroethane	30	30	100.00
1,1,2,2-Tetrachloroethane	30	30	100.00
1,1,2-Trichloroethane	30	30	100.00
1,1-Dichloroethane	30	30	100.00
1,1-Dichloroethene	30	30	100.00
1,2,3-Trichloropropane	30	30	100.00
1,2-Dibromo-3-chloropropane	30	30	100.00
1,2-Dibromoethane	30	30	100.00
1,2-Dichlorobenzene	30	30	100.00
1,2-Dichloroethane	30	30	100.00
1,2-Dichloropropane	30	30	100.00
1,4-Dichlorobenzene	30	30	100.00
2-Butanone	30	30	100.00
2-Hexanone	30	30	100.00
4-Methyl-2-Pentanone	30	30	100.00
Acetone	30	30	100.00
Acrylonitrile	30	30	100.00
Benzene	30	30	100.00
Bromochloromethane	30	30	100.00
Bromodichloromethane	30	30	100.00
Bromoform	30	30	100.00
Bromomethane	30	30	100.00
Carbon disulfide	30	30	100.00
Carbon tetrachloride	30	30	100.00
Chlorobenzene	30	30	100.00
Chloroethane	30	30	100.00
Chloroform	30	30	100.00
Chloromethane	30	30	100.00
cis-1,2-Dichloroethene	30	30	100.00
cis-1,3-Dichloropropene	30	30	100.00
Chlorodibromomethane	30	30	100.00
Dibromomethane	30	30	100.00
Ethylbenzene	30	30	100.00
Iodomethane	30	30	100.00
Dichloromethane	30	30	100.00
Styrene	30	30	100.00
Tetrachloroethylene	30	30	100.00
Toluene	30	30	100.00
trans-1,2-Dichloroethene	30	30	100.00
trans-1,3-Dichloropropene	30	30	100.00
trans-1,4-Dichloro-2-butene	30	30	100.00
Trichloroethylene	30	30	100.00
Trichlorofluoromethane	30	30	100.00
Vinyl acetate	30	30	100.00
Vinyl chloride	30	30	100.00
Xylene	30	30	100.00
Total	**1410**	**1410**	**100.00**

Poisson Prediction Interval Based upon Pooled Background Appendix I VOCs
Greene County Closed Sanitary Landfill

All detected VOCs >SWSL (Background Well: MW-1R)

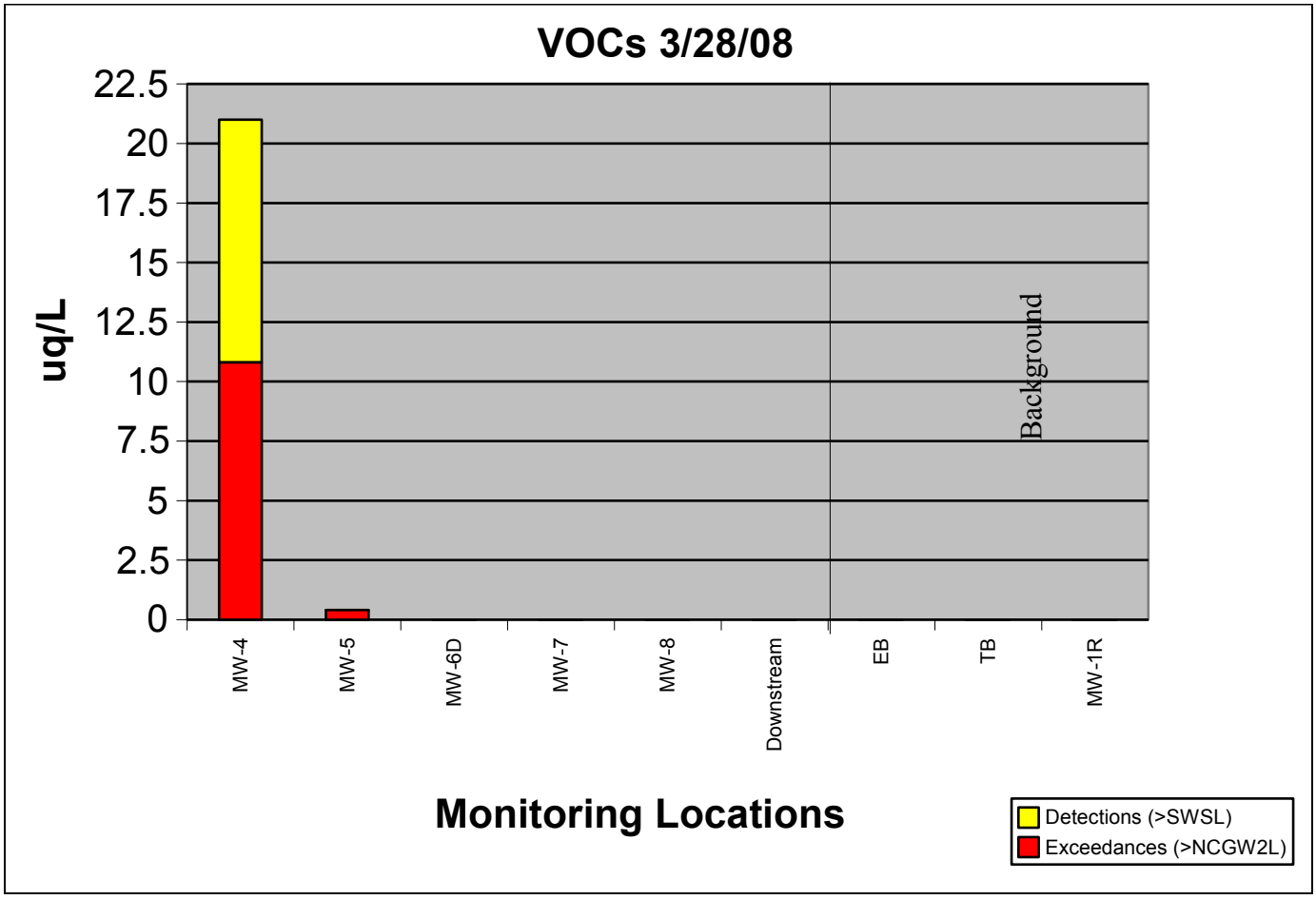
Constituent	MW-4
1,4-Dichlorobenzene	**x**
cis-1,2-Dichloroethene	x
Benzene	**x**
Vinyl Chloride	**x**
Detection(s) per Scan	4.00

x = Bold indicates detected levels exceed NCGW2L Standard

Total number of sampling events [n] =	30
Total number of detections in background wells [y] =	0
Number of comparisons (downgradient wells) [k] =	5
One-sided value of Student's t-statistic (95% confidence) [t] =	2.46
Expected number of detections in a single future sample [y*] =	**0.2017**

Statistically Significant VOC detections within MW-4 at a 95% confidence level

VOC Histogram for All Detections above SWSL, GWP, and NCGW2L
Greene County Closed Sanitary Landfill



Sample ID	Detected >SWSL<NCGW2L		Detected >NCGW2L		Cumulative >SWSL & >NCGW2L		Exceeded NCGW2L Aromatic Parameter(s)	Exceeded NCGW2L CAH Parameter(s)	Exceeded Parameter(s) Detected >Historical Identified Range
	#	Concentration (uq/L)	#	Concentration (uq/L)	#	Concentration (uq/L)			
MW-4	1	10.8	3	10.2	4	21	1,4-DCB, Benzene	Vc	1,4-DCB
MW-5	0	0	1	0.4	1	0.4	-	Vc[J]	Vc[J]
Total	**1**	**10.80**	**4**	**10.60**	**5**	**21.40**	**2**	**2**	**2**

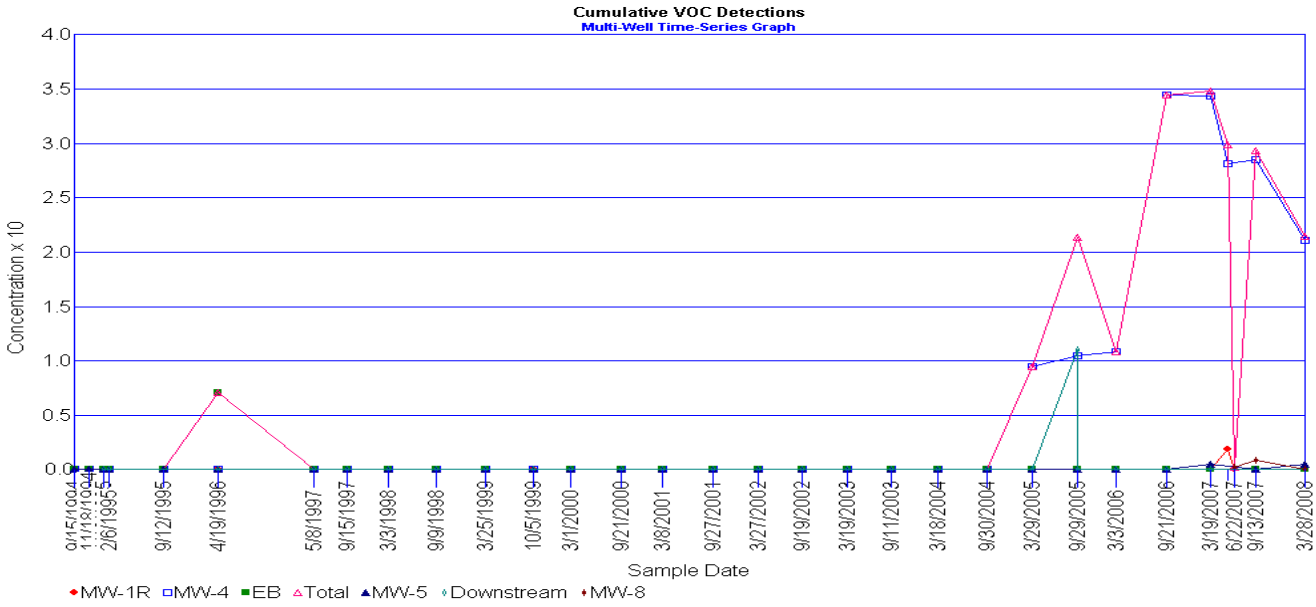
Table only contains VOC constituents detected above the SWSL, GWP, or NCGW2L Standard

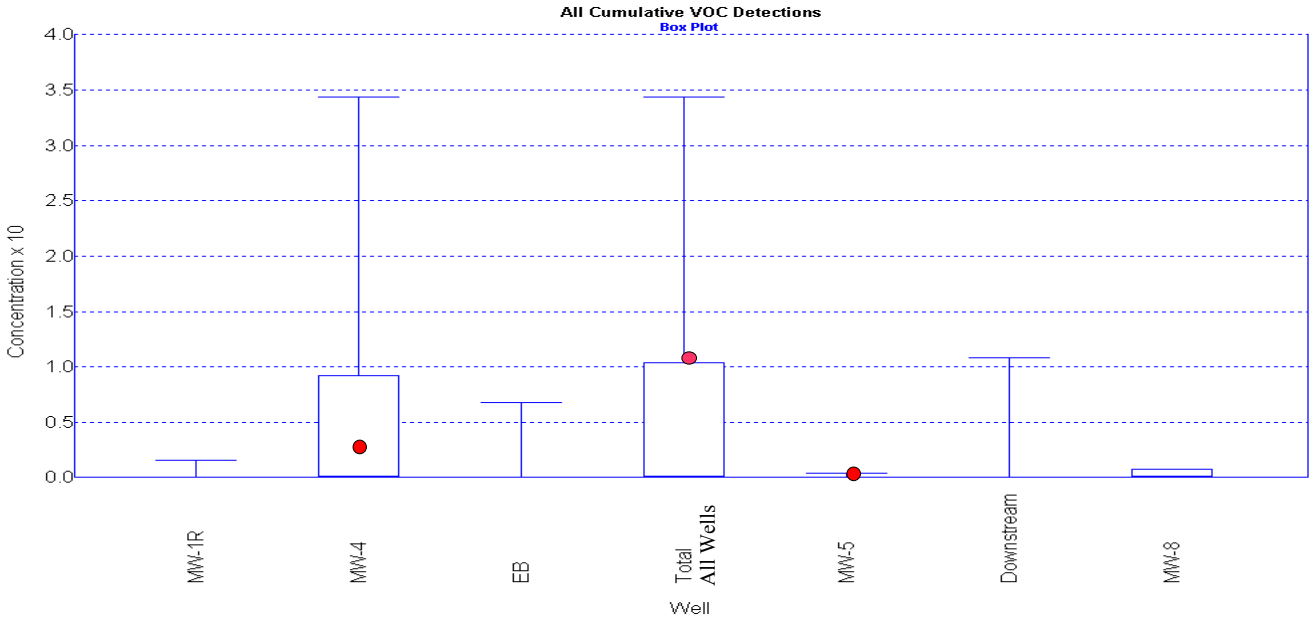
SWSL = Solid Waste Section Reporting Limit (Current as of Sampling Event)

NCGW2L = North Carolina Ground Water 2L Standard (Current as of Sampling Event)

[J] = Detected >NCGW2L BUT <SWSL ("J" Qualifier) Therefore, concentration non-quantifiable or an estimated value

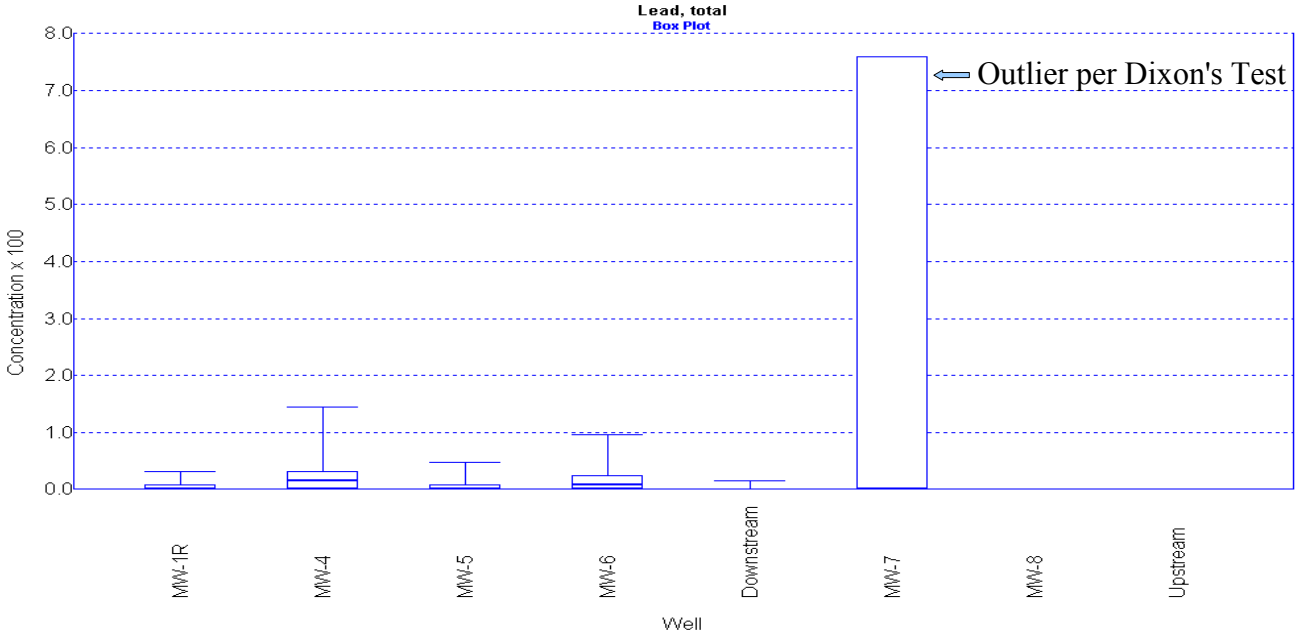
Histograms for Cumulative VOC Detections >MDL
Greene County Closed Sanitary Landfill

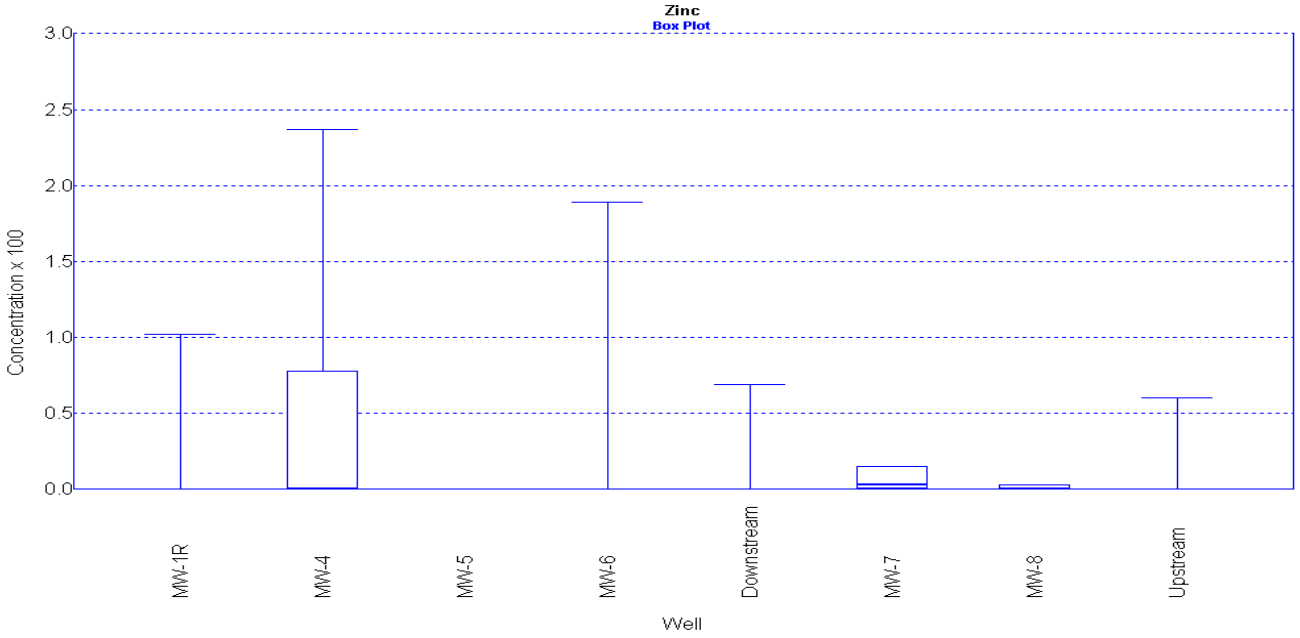




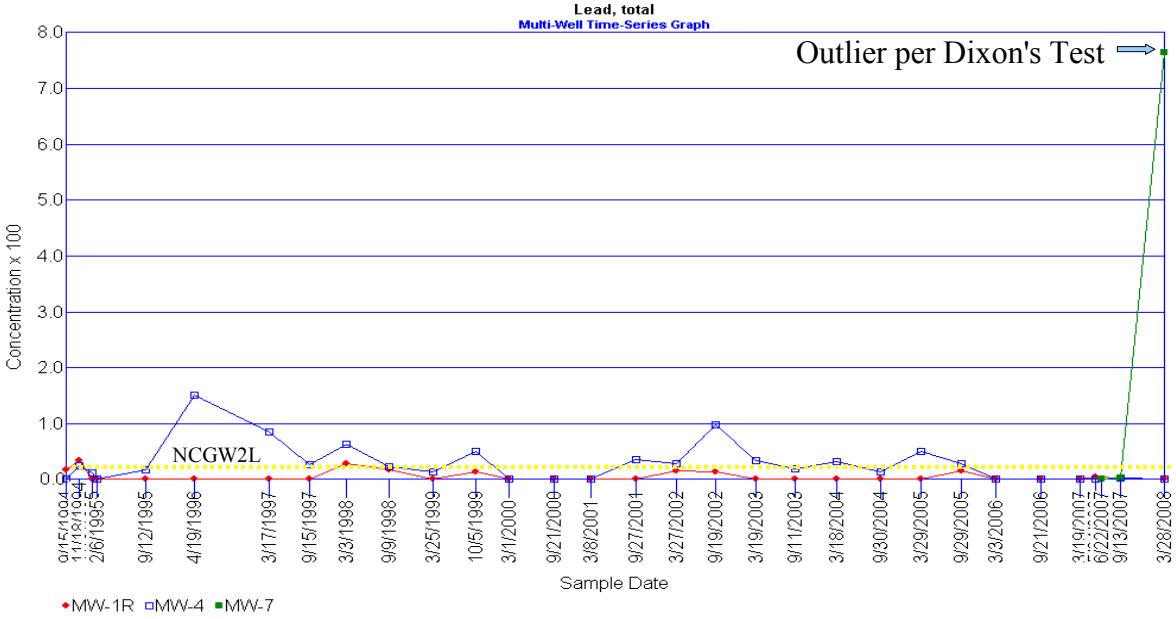
● Current Sampling Event

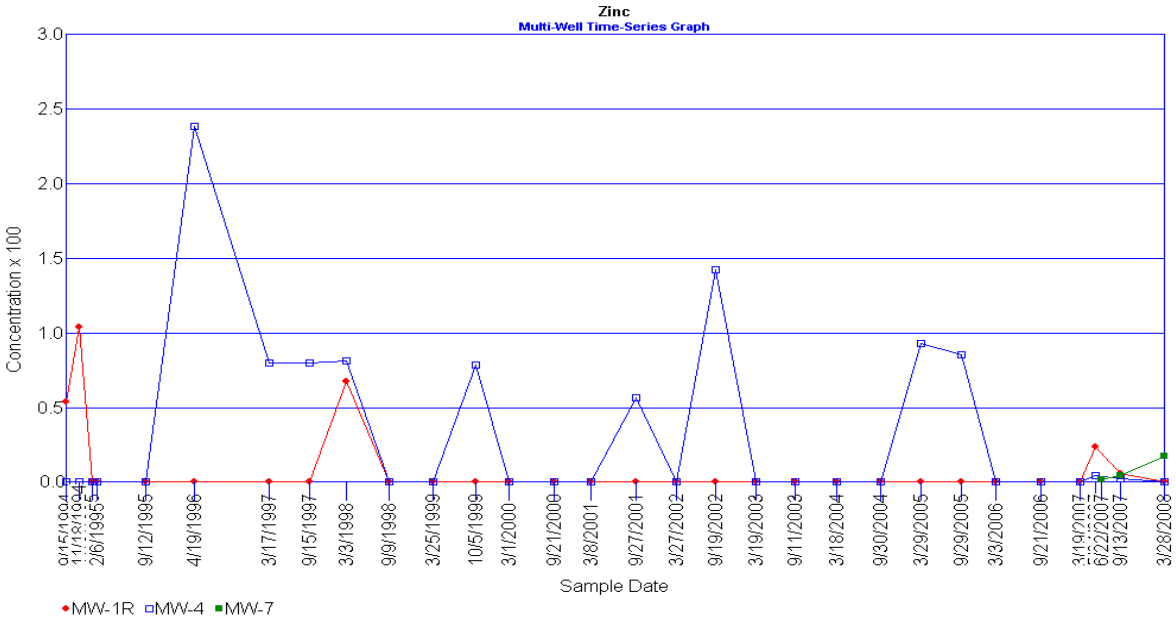
Box Plots for Select Constituents
Greene County Closed Sanitary Landfill





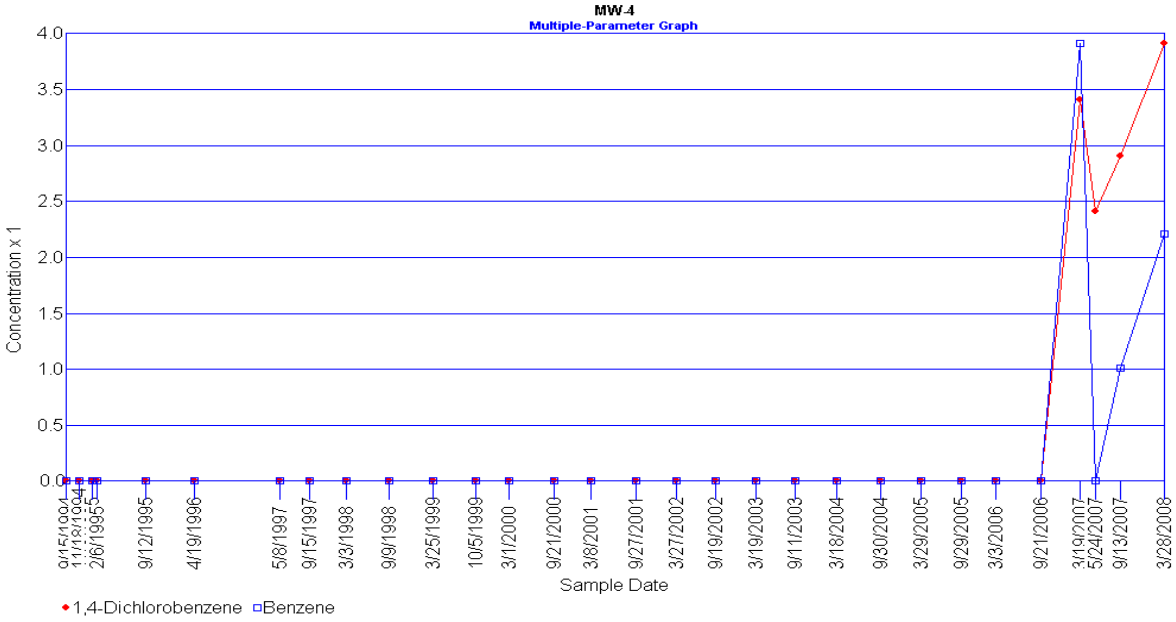
Time Series Plots for Select Constituents
Greene County Closed Sanitary Landfill



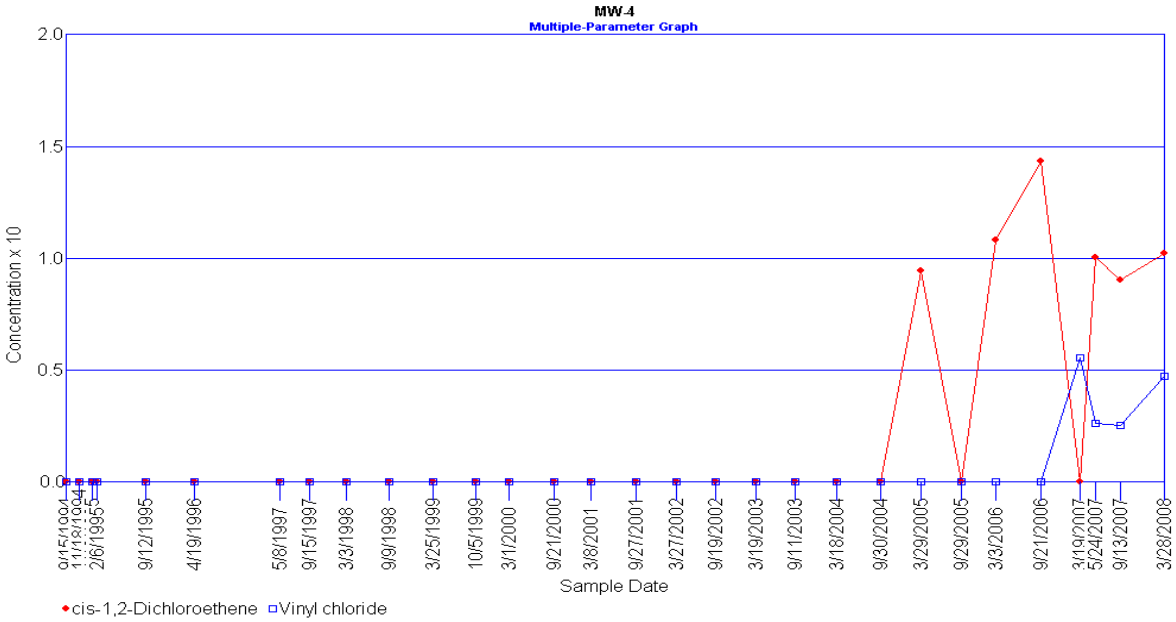


Time Series Plots for Select Constituents
Greene County Closed Sanitary Landfill

AROMATICS



CAH



Basic Statistics

Basic Statistics

Parameter: Lead, total

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL

	Total Observations
168	
Total Non-Detects	108
Pooled Mean	17.2067
Pooled Std Dev	61.2005
Background Mean	7.92067
Background Std Dev	6.91014

Background Wells

There is 1 background well

Well	Samples	Non-Detects	% ND	Total
MW-1R	30	20	66.6667	237.62

Well	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1R	7.92067	6.91014	0	2372	79.0667

Compliance Wells

There are 7 compliance wells

Well	Samples	Non-Detects	% ND	Total
MW-4	30	10	33.3333	813.52
MW-5	29	19	65.5172	274.72
MW-6	29	13	44.8276	567.82
Downstream	25	24	96	136.02
MW-7	3	1	33.3333	764.3
MW-8	3	2	66.6667	1.72
Upstream	19	19	100	95

Well	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-4	27.1173	33.2061	19.1967	13.5653	3443	114.767
MW-5	9.4731	10.7538	1.55244	13.6817	2349.5	81.0172
MW-6	19.58	24.8666	11.6593	13.6817	2994.5	103.259
Downstream	5.4408	3.39081	-2.47987	14.2274	1449	57.96
MW-7	254.767	440.143	246.846	31.8134	331.5	110.5
MW-8	0.573333	0.502129	-7.34733	31.8134	221	73.6667
Upstream	5	0	-2.92067	15.4041	1035.5	54.5

Analysis of Variance Statistics

SS Wells	183858
SS Total	625499

Kruskal-Wallis Statistics

Non-Detect Rank	54.5
Background Rank Sum	2372
Background Rank Mean	79.0667
H Statistic	32.1275
H Adjusted for Ties	43.75

Dixon's Test for Outliers

Parameter: Lead, total

Well: MW-7

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL

For 3 Samples
5% Level of Significance

Iteration	Highest	Lowest	Critical	Outlier
1	0.999082	0.000917792	0.941	763

Well	Date	Conc.	Outlier
MW-7	6/22/2007	ND<1	FALSE
	9/13/2007	0.3	FALSE
	3/28/2008	763	TRUE

Basic Statistics

Parameter: Zinc

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL

	Total Observations
168	
Total Non-Detects	135
Pooled Mean	31.5796
Pooled Std Dev	32.4928
Background Mean	27.741
Background Std Dev	18.3623

Background Wells

There is 1 background well

Well	Samples	Non-Detects	% ND	Total
MW-1R	30	25	83.3333	832.23

Well	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1R	27.741	18.3623	0	2454	81.8

Compliance Wells

There are 7 compliance wells

Well	Samples	Non-Detects	% ND	Total
MW-4	30	19	63.3333	1365.93
MW-5	29	28	96.5517	658.43
MW-6	29	22	75.8621	1299.03
Downstream	25	23	92	621.93
MW-7	3	0	0	21.8
MW-8	3	1	33.3333	7.03
Upstream	19	17	89.4737	499

Well	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-4	45.531	48.8607	17.79	8.08002	3000	100
MW-5	22.7045	6.89928	-5.03652	8.14938	2043	70.4483
MW-6	44.7941	50.4899	17.0531	8.14938	2610	90
Downstream	24.8772	11.2175	-2.8638	8.4744	1863	74.52
MW-7	7.26667	8.54478	-20.4743	18.9493	423	141
MW-8	2.34333	2.3876	-25.3977	18.9493	348	116
Upstream	26.2632	9.96573	-1.47784	9.17527	1455	76.5789

Analysis of Variance Statistics

SS Wells	19627.4
SS Total	176316

Kruskal-Wallis Statistics

Non-Detect Rank	68
Background Rank Sum	2454
Background Rank Mean	81.8
H Statistic	12.7917
H Adjusted for Ties	26.5872

Basic Statistics

Parameter: 1,4-Dichlorobenzene

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL

	Total Observations
168	
Total Non-Detects	164
Pooled Mean	2.2856
Pooled Std Dev	0.696249
Background Mean	2.22617
Background Std Dev	0.745171

Background Wells

There is 1 background well

Well	Samples	Non-Detects	% ND	Total
MW-1R	30	30	100	66.785

Well	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1R	2.22617	0.745171	0	2475	82.5

Compliance Wells

There are 7 compliance wells

Well	Samples	Non-Detects	% ND	Total
MW-4	30	26	86.6667	77.6
MW-5	29	29	100	66.71
MW-6	29	29	100	66.71
Downstream	25	25	100	59.105
MW-7	3	3	100	0.285
MW-8	3	3	100	0.285
Upstream	19	19	100	46.5

Well	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-4	2.58667	0.305956	0.3605	0.14241	2811	93.7
MW-5	2.30034	0.635724	0.0741782	0.143632	2392.5	82.5
MW-6	2.30034	0.635724	0.0741782	0.143632	2392.5	82.5
Downstream	2.3642	0.511329	0.138033	0.149361	2062.5	82.5
MW-7	0.095	0.0173205	-2.13117	0.333981	247.5	82.5
MW-8	0.095	0.0173205	-2.13117	0.333981	247.5	82.5
Upstream	2.44737	0.229416	0.221202	0.161714	1567.5	82.5

Analysis of Variance Statistics

SS Wells	32.2818
SS Total	80.9553

Kruskal-Wallis Statistics

Non-Detect Rank	82.5
Background Rank Sum	2475
Background Rank Mean	82.5
H Statistic	1.30651
H Adjusted for Ties	18.7332

Basic Statistics

Parameter: Benzene

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL

	Total Observations
168	
Total Non-Detects	165
Pooled Mean	2.25131
Pooled Std Dev	0.722373
Background Mean	2.224
Background Std Dev	0.751576

Background Wells

There is 1 background well

Well	Samples	Non-Detects	% ND	Total
MW-1R	30	30	100	66.72

Well	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1R	2.224	0.751576	0	2490	83

Compliance Wells

There are 7 compliance wells

Well	Samples	Non-Detects	% ND	Total
MW-4	30	27	90	72.16
MW-5	29	29	100	66.66
MW-6	29	29	100	66.66
Downstream	25	25	100	59.08
MW-7	3	3	100	0.22
MW-8	3	3	100	0.22
Upstream	19	19	100	46.5

Well	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-4	2.40533	0.586772	0.181333	0.153807	2742	91.4
MW-5	2.29862	0.641893	0.0746207	0.155127	2407	83
MW-6	2.29862	0.641893	0.0746207	0.155127	2407	83
Downstream	2.3632	0.515935	0.1392	0.161314	2075	83
MW-7	0.0733333	0.011547	-2.15067	0.360709	249	83
MW-8	0.0733333	0.011547	-2.15067	0.360709	249	83
Upstream	2.44737	0.229416	0.223368	0.174655	1577	83

Analysis of Variance Statistics

SS Wells	30.3687
SS Total	87.1445

Kruskal-Wallis Statistics

Non-Detect Rank	83
Background Rank Sum	2490
Background Rank Mean	83
H Statistic	0.734911
H Adjusted for Ties	13.9659

Basic Statistics

Parameter: cis-1,2-Dichloroethene

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL

	Total Observations
168	
Total Non-Detects	161
Pooled Mean	2.58935
Pooled Std Dev	1.7188
Background Mean	2.257
Background Std Dev	0.741462

Background Wells

There is 1 background well

Well	Samples	Non-Detects	% ND	Total
MW-1R	30	30	100	67.71

Well	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1R	2.257	0.741462	0	2430	81

Compliance Wells

There are 7 compliance wells

Well	Samples	Non-Detects	% ND	Total
MW-4	30	24	80	123.7
MW-5	29	28	96.5517	67.97
MW-6	29	29	100	67.64
Downstream	25	25	100	60.07
MW-7	3	3	100	0.21
MW-8	3	3	100	0.21
Upstream	19	19	100	47.5

Well	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-4	4.12333	3.39611	1.86633	0.396173	2937	97.9
MW-5	2.34379	0.585762	0.0867931	0.399574	2430	83.7931
MW-6	2.33241	0.62665	0.0754138	0.399574	2349	81
Downstream	2.4028	0.486	0.1458	0.41551	2025	81
MW-7	0.07	0	-2.187	0.929109	243	81
MW-8	0.07	0	-2.187	0.929109	243	81
Upstream	2.5	0	0.243	0.449875	1539	81

Analysis of Variance Statistics

SS Wells	116.674
SS Total	493.363

Kruskal-Wallis Statistics

Non-Detect Rank	81
Background Rank Sum	2430
Background Rank Mean	81
H Statistic	2.84723
H Adjusted for Ties	23.7533

Basic Statistics

Parameter: Vinyl chloride

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL

	Total Observations
168	
Total Non-Detects	163
Pooled Mean	4.49479
Pooled Std Dev	1.40132
Background Mean	4.4305
Background Std Dev	1.52489

Background Wells

There is 1 background well

Well	Samples	Non-Detects	% ND	Total
MW-1R	30	30	100	132.915

Well	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1R	4.4305	1.52489	0	2460	82

Compliance Wells

There are 7 compliance wells

Well	Samples	Non-Detects	% ND	Total
MW-4	30	26	86.6667	145.3
MW-5	29	28	96.5517	133.07
MW-6	29	29	100	132.84
Downstream	25	25	100	117.67
MW-7	3	3	100	0.415
MW-8	3	3	100	0.415
Upstream	19	19	100	92.5

Well	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-4	4.84333	0.632828	0.412833	0.293009	2798	93.2667
MW-5	4.58862	1.27939	0.158121	0.295524	2460	84.8276
MW-6	4.58069	1.3067	0.15019	0.295524	2378	82
Downstream	4.7068	1.06907	0.2763	0.30731	2050	82
MW-7	0.138333	0.0548483	-4.29217	0.687167	246	82
MW-8	0.138333	0.0548483	-4.29217	0.687167	246	82
Upstream	4.86842	0.573539	0.437921	0.332726	1558	82

Analysis of Variance Statistics

SS Wells	121.886
SS Total	327.936

Kruskal-Wallis Statistics

Non-Detect Rank	82
Background Rank Sum	2460
Background Rank Mean	82
H Statistic	1.26373
H Adjusted for Ties	14.5832

Interwell Analyses for Metals

Non-Parametric Tolerance Interval

Parameter: Lead, total

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL

Total Percent Non-Detects = 63.6364%
Background Samples (n) = 30
Maximum Background Concentration = 32
Minimum Coverage = 90.5%
Average Coverage = 96.7742%

Well	Sample	Result	Impacted
MW-7	6/22/2007	ND<1	FALSE
MW-7	9/13/2007	0.3	FALSE
MW-7	3/28/2008	763	TRUE

Non-Parametric Tolerance Interval

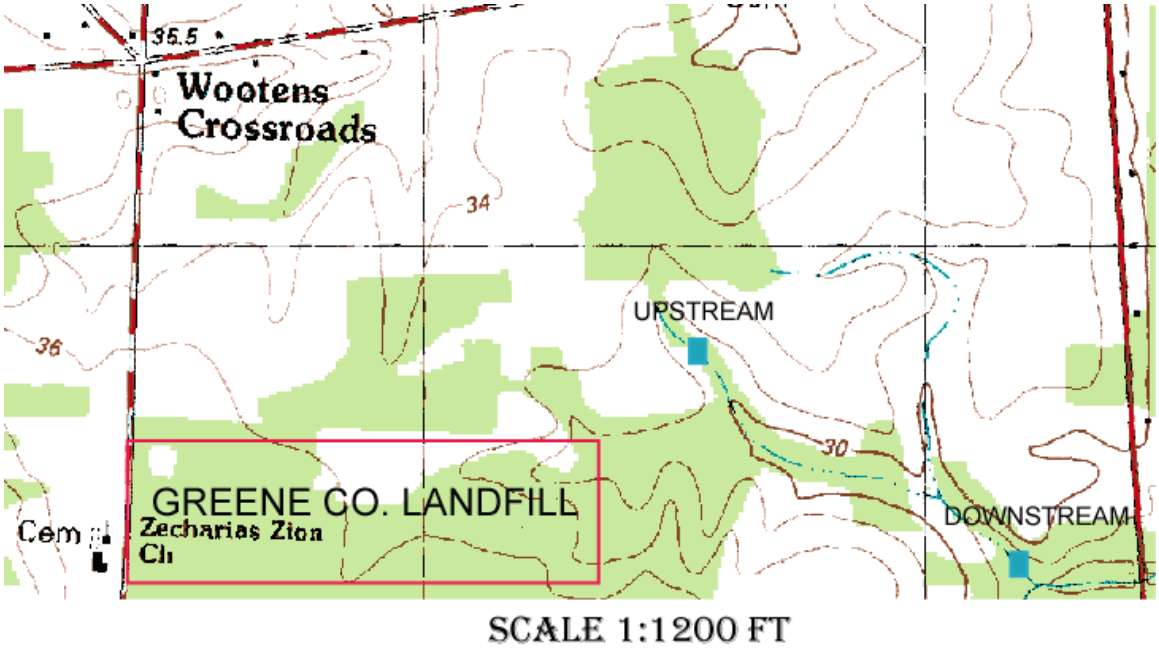
Parameter: Zinc

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL

Total Percent Non-Detects = 75.7576%
Background Samples (n) = 30
Maximum Background Concentration = 103
Minimum Coverage = 90.5%
Average Coverage = 96.7742%

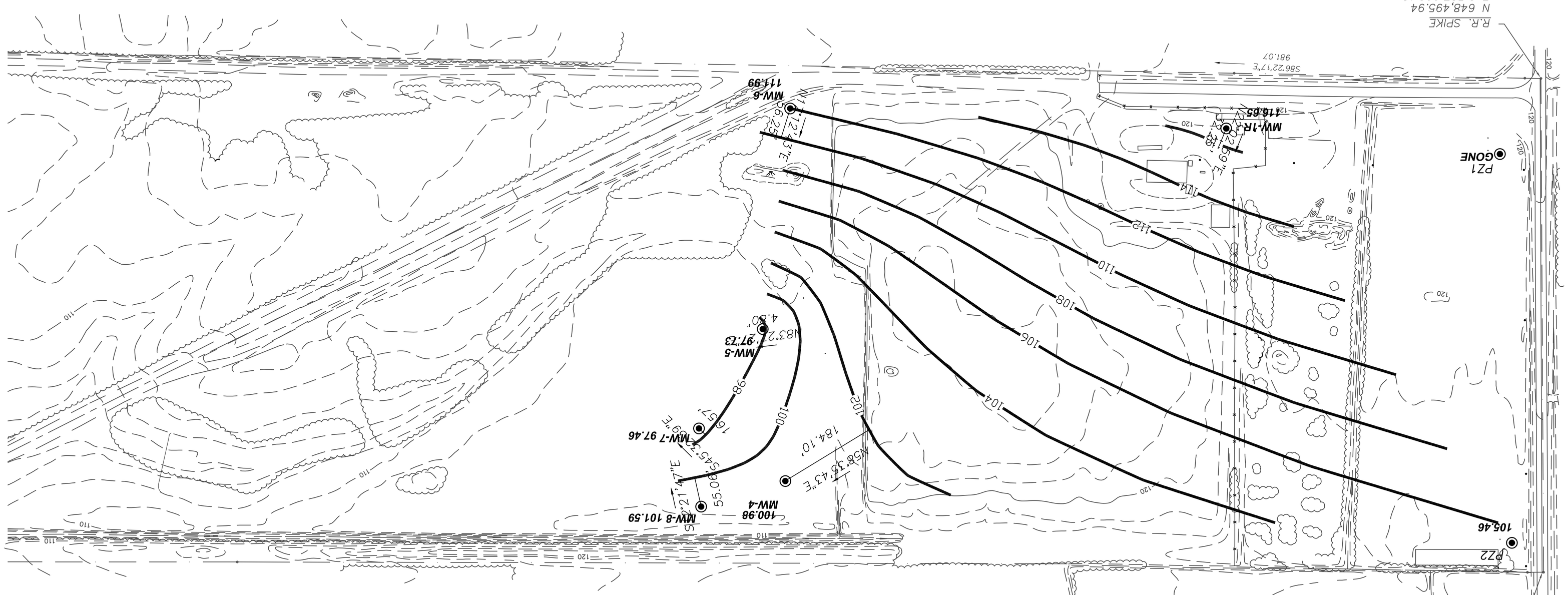
Well	Sample	Result	Impacted
MW-7	6/22/2007	1	FALSE
MW-7	9/13/2007	3.8	FALSE
MW-7	3/28/2008	17	FALSE

Surface Water Locations
Greene County Closed Landfill



Greene County Closed MSWLF March 28, 2008

WELL #	TOP OF PIPE ELEVATION (FT)	DEPTH TO WATER (FT)	WATER ELEVATION (FT)	Total Cumulative VOCs >SWSL (ug/L)
MW-1R	121.78	5.13	116.65	0
MW-4	117.89	16.91	100.98	21
MW-5	115.76	18.03	97.73	0
MW-6	117.41	5.42	111.99	0
MW-7	110.48	13.02	97.46	0
MW-8	111.36	9.77	101.59	0
PZ-2	119.59	14.13	105.46	Not Sampled



LEGEND

- EXISTING DIVERSION DITHC
- 2670 EXISTING CONTOURS
- BOUNDRY
- MW1 MONITORING WELL
- PZ1 PIEZOMETER
- EQUIPOTENTIAL CONTOURS

GREENE COUNTY CLOSED MSWLF & ACTIVE C&D LANDFILL NORTH CAROLINA

SINGLE DAY POTENTIOMETRIC MAP

NO.	DESCRIPTION	REV.	BY	DATE

SCALE: 1"=100'
DATE: 6/21/2001
DRWN. BY: C. SEYMOUR
CHKD. BY: K. YOSHIDA
PROJECT NUMBER
G01011.0
DRAWING NO.
SHEET NO.

Municipal Services Engineering Company, P.A.
P.O. BOX 97 GARNER, N.C. 27529 (919) 772-5393
P.O. BOX 349 BOONE, N.C. 28607 (704) 262-1767

Laboratory Results

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

P.O. BOX 7085, 114 OAKMONT DRIVE
GREENVILLE, N.C. 27835-7085

PHONE (252) 756-6208
FAX (252) 756-0633

ID#: 6005

GREENE CO. LANDFILL
DAVID JONES
P.O. BOX 543
SNOW HILL ,NC 28580

DATE COLLECTED: 03/28/08
DATE REPORTED : 04/16/08

REVIEWED BY:

PARAMETERS	MDL	SWSL	Downstream	Well #4	Well #5	Well #6	Well #7	Analysis Date	Analyst	Method Code
PH (field measurement), Units			5.6	5.4	4.9	5.1	5.6	03/28/08	RJH	SM4500HB
Total Alkalinity, mg/l	1.0	1.0		85	--- U	--- U	--- U	03/28/08	TRB	SM2320B
Chloride, mg/l	5.0	5.0		19	41	25	31	04/03/08	MDM	SM4500-CLB
Total Dissolved Residue, mg/l	1.0	1.0		137	41	66	42	03/31/08	TRB	SM2540C
Sulfate, mg/l	5.0	250.0		6.3 J	--- U	--- U	--- U	04/01/08	TRB	SM4500-SO4
Antimony, ug/l	0.08	6.0	--- U	--- U	--- U	--- U	0.9 J	04/02/08	LFJ	EPA200.8
Arsenic, ug/l	0.07	10.0	0.7 J	2.5 J	0.1 J	--- U	1.4 J	04/02/08	LFJ	EPA200.8
Barium, ug/l	0.34	100.0	25.5 J	35.1 J	24 J	11.6 J	47.5 J	04/02/08	LFJ	EPA200.8
Beryllium, ug/l	0.17	1.0	--- U	0.1 J	0.1 J	0.1 J	0.2 J	04/02/08	LFJ	EPA200.8
Cadmium, ug/l	0.04	1.0	0.2 J	0.2 J	0.1 J	--- U	0.1 J	04/02/08	LFJ	EPA200.8
Cobalt, ug/l	2.53	10.0	0.3 J	1.3 J	0.4 J	0.1 J	0.9 J	04/02/08	LFJ	EPA200.8
Copper, ug/l	2.24	10.0	1.2 J	1.0 J	0.2 J	0.2 J	6.3 J	04/02/08	LFJ	EPA200.8
Total Chromium, ug/l	1.38	10.0	0.6 J	--- U	--- U	--- U	4.7 J	04/02/08	LFJ	EPA200.8
Iron, ug/l	14.0	300.0		27830	3218	657	963	04/08/08	ADD	SM3111B
Manganese, ug/l	0.50	50.0		137	19 J	10 J	15 J	04/08/08	LFJ	EPA200.7
Lead, ug/l	0.04	10.0	0.9 J	0.8 J	0.3 J	0.3 J	763	04/02/08	LFJ	EPA200.8
Mercury, ug/l	0.13	0.20		--- U	--- U	--- U	--- U	04/02/08	LFJ	EPA200.8
Nickel, ug/l	1.35	50.0	0.7 J	1.2 J	0.5 J	0.2 J	13 J	04/02/08	LFJ	EPA200.8
Selenium, ug/l	0.14	10.0	--- U	0.9 J	--- U	--- U	--- U	04/02/08	LFJ	EPA200.8
Silver, ug/l	2.32	10.0	--- U	--- U	--- U	--- U	--- U	04/02/08	LFJ	EPA200.8
Thallium, ug/l	0.04	5.0	0.1 J	0.1 J	--- U	--- U	0.1 J	04/02/08	LFJ	EPA200.8
Vanadium, ug/l	1.21	25.0	2.6 J	2.3 J	0.9 J	1.2 J	7.1 J	04/02/08	LFJ	EPA200.8
Zinc, ug/l	1.86	10.0	6.6 J	5.0 J	3.4 J	2.7 J	17	04/02/08	LFJ	EPA200.8
Conductivity (at 25c), uMhos	1.0	1.0	96	226	78	52	54	03/28/08	RJH	SM2510B
Temperature, °C			15	18	18	16	17	03/28/08	RJH	SM2550B
Static Water Level, feet				16.91	18.03	5.42	13.02	03/28/08	RJH	
Well Depth, feet				26.16	28.34	26.87	21.38	03/28/08	RJH	

J = Between MDL and SWSL, U = Below ALL Quanititation Limits.

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

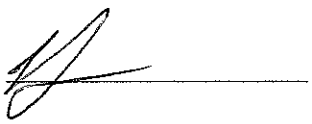
P.O. BOX 7085, 114 OAKMONT DRIVE
GREENVILLE, N.C. 27835-7085

PHONE (252) 756-6208
FAX (252) 756-0633

ID#: 6005

GREENE CO. LANDFILL
DAVID JONES
P.O. BOX 543
SNOW HILL ,NC 28580

DATE COLLECTED: 03/28/08
DATE REPORTED : 04/16/08

REVIEWED BY: 

PARAMETERS	MDL	SWSL	Well #8	Well #1R	Piezometer #2	Trip Blank	Equipment Blank	Analysis Date	Analyst	Method Code
PH (field measurement), Units			5.9	4.5				03/28/08	RJH	SM4500HB
Total Alkalinity, mg/l	1.0	1.0	--- U	--- U				03/28/08	TRB	SM2320B
Chloride, mg/l	5.0	5.0	40	326				04/03/08	MDM	SM4500-CLB
Total Dissolved Residue, mg/l	1.0	1.0	42	264				03/31/08	TRB	SM2540C
Sulfate, mg/l	5.0	250.0	--- U	--- U				04/01/08	TRB	SM4500-SO4
Antimony, ug/l	0.08	6.0	--- U	--- U			--- U	04/02/08	LFJ	EPA200.8
Arsenic, ug/l	0.07	10.0	--- U	--- U			--- U	04/02/08	LFJ	EPA200.8
Barium, ug/l	0.11	100.0	37.8 J	171			0.2 J	04/02/08	LFJ	EPA200.8
Beryllium, ug/l	0.06	1.0	0.1 J	0.3 J			--- U	04/02/08	LFJ	EPA200.8
Cadmium, ug/l	0.04	1.0	--- U	0.2 J			--- U	04/02/08	LFJ	EPA200.8
Cobalt, ug/l	0.03	10.0	0.4 J	0.7 J			--- U	04/02/08	LFJ	EPA200.8
Copper, ug/l	0.05	10.0	0.3 J	1.4 J			0.2 J	04/02/08	LFJ	EPA200.8
Total Chromium, ug/l	0.11	10.0	--- U	--- U			--- U	04/02/08	LFJ	EPA200.8
Iron, ug/l	14.0	300.0	56 J	97 J			31 J	04/08/08	ADD	SM3111B
Manganese, ug/l	0.50	50.0	--- U	39 J			--- U	04/08/08	LFJ	EPA200.7
Lead, ug/l	0.04	10.0	0.8 J	1.4 J			--- U	04/02/08	LFJ	EPA200.8
Mercury, ug/l	0.13	0.20	0.01 J	--- U			--- U	04/02/08	LFJ	EPA200.8
Nickel, ug/l	1.35	50.0	0.4 J	1.8 J			0.1 J	04/02/08	LFJ	EPA200.8
Selenium, ug/l	0.14	10.0	--- U	0.4 J			--- U	04/02/08	LFJ	EPA200.8
Silver, ug/l	0.04	10.0	--- U	--- U			--- U	04/02/08	LFJ	EPA200.8
Thallium, ug/l	0.04	5.0	0.2 J	0.2 J			--- U	04/02/08	LFJ	EPA200.8
Vanadium, ug/l	1.21	25.0	0.6 J	0.6 J			0.8 J	04/02/08	LFJ	EPA200.8
Zinc, ug/l	1.86	10.0	1.7 J	8.6 J			5.8 J	04/02/08	LFJ	EPA200.8
Conductivity (at 25c), uMhos	1.0	1.0	78	475				03/28/08	RJH	SM2510B
Temperature, °C			18	16				03/28/08	RJH	SM2550B
Static Water Level, feet			9.77	5.13	14.13			03/28/08	RJH	
Well Depth, feet			20.34	19.51				03/28/08	RJH	

J = Between MDL and SWSL, U = Below ALL Quanititation Limits.

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

P.O. BOX 7085, 114 OAKMONT DRIVE
GREENVILLE, N.C. 27835-7085

PHONE (252) 756-6208
FAX (252) 756-0633

CLIENT: GREENE CO. LANDFILL
DAVID JONES
P.O. BOX 543
SNOW HILL, NC 28580

CLIENT ID: 6005

ANALYST: MAO
DATE COLLECTED: 03/28/08
DATE ANALYZED: 04/01/08
DATE REPORTED: 04/16/08

REVIEWED BY: _____

VOLATILE ORGANICS
EPA METHOD 8260B

PARAMETERS, ug/l	MDL	SWSL	Downstream	Well #4	Well #5	Well #6	Well #7
1. Chloromethane	0.18	1.0	--- U	--- U	--- U	--- U	--- U
2. Vinyl Chloride	0.34	1.0	--- U	4.70	0.40 J	--- U	--- U
3. Bromomethane	0.26	10.0	--- U	--- U	--- U	--- U	--- U
4. Chloroethane	0.29	10.0	--- U	9.20 J	1.00 J	--- U	--- U
5. Trichlorofluoromethane	0.13	1.0	--- U	--- U	--- U	--- U	--- U
6. 1,1-Dichloroethene	0.14	5.0	--- U	--- U	--- U	--- U	--- U
7. Acetone	1.21	100.0	5.50 J	9.70 J	4.90 J	3.60 J	4.30 J
8. Iodomethane	0.12	10.0	--- U	--- U	--- U	--- U	--- U
9. Carbon Disulfide	0.14	100.0	--- U	--- U	--- U	--- U	--- U
10. Methylene Chloride	0.14	1.0	--- U	0.70 J	--- U	--- U	--- U
11. trans-1,2-Dichloroethene	0.13	5.0	--- U	--- U	--- U	--- U	--- U
12. 1,1-Dichloroethane	0.16	5.0	--- U	2.00 J	0.30 J	--- U	--- U
13. Vinyl Acetate	0.20	50.0	--- U	--- U	--- U	--- U	--- U
14. Cis-1,2-Dichloroethene	0.14	5.0	--- U	10.20	1.50 J	--- U	--- U
15. 2-Butanone	0.85	100.0	--- U	--- U	--- U	--- U	1.30 J
16. Bromochloromethane	0.11	3.0	--- U	--- U	--- U	--- U	--- U
17. Chloroform	0.13	5.0	--- U	--- U	--- U	--- U	--- U
18. 1,1,1-Trichloroethane	0.11	1.0	--- U	--- U	--- U	--- U	--- U
19. Carbon Tetrachloride	0.13	1.0	--- U	--- U	--- U	--- U	--- U
20. Benzene	0.16	1.0	--- U	2.20	0.30 J	--- U	--- U
21. 1,2-Dichloroethane	0.12	1.0	--- U	--- U	--- U	--- U	--- U
22. Trichloroethene	0.13	1.0	--- U	0.40 J	--- U	--- U	--- U
23. 1,2-Dichloropropane	0.17	1.0	0.20 J	--- U	--- U	--- U	--- U
24. Bromodichloromethane	0.13	1.0	--- U	--- U	--- U	--- U	--- U
25. Cis-1,3-Dichloropropene	0.17	1.0	--- U	--- U	--- U	--- U	--- U
26. 4-Methyl-2-Pentanone	0.68	100.0	--- U	--- U	--- U	--- U	--- U
27. Toluene	0.13	1.0	0.20 J	--- U	--- U	--- U	--- U
28. trans-1,3-Dichloropropene	0.14	1.0	--- U	--- U	--- U	--- U	--- U
29. 1,1,2-Trichloroethane	0.20	1.0	--- U	--- U	--- U	--- U	--- U
30. Tetrachloroethene	0.16	1.0	--- U	--- U	--- U	--- U	--- U
31. 2-Hexanone	1.00	50.0	--- U	--- U	--- U	--- U	--- U
32. Dibromochloromethane	0.14	3.0	--- U	--- U	--- U	--- U	--- U
33. 1,2-Dibromoethane	0.13	1.0	--- U	--- U	--- U	--- U	--- U
34. Chlorobenzene	0.13	3.0	--- U	0.80 J	--- U	--- U	--- U
35. 1,1,1,2-Tetrachloroethane	0.14	5.0	--- U	--- U	--- U	--- U	--- U
36. Ethylbenzene	0.16	1.0	--- U	0.30 J	--- U	--- U	--- U
37. Xylenes	0.48	5.0	--- U	--- U	--- U	--- U	--- U
38. Dibromomethane	0.17	10.0	--- U	--- U	--- U	--- U	--- U
39. Styrene	0.16	1.0	--- U	--- U	--- U	--- U	--- U
40. Bromoform	0.11	3.0	--- U	--- U	--- U	--- U	--- U
41. 1,1,2,2-Tetrachloroethane	0.16	3.0	--- U	--- U	--- U	--- U	--- U
42. 1,2,3-Trichloropropane	0.06	1.0	--- U	--- U	--- U	--- U	--- U
43. 1,4-Dichlorobenzene	0.21	1.0	--- U	3.90	--- U	--- U	--- U
44. 1,2-Dichlorobenzene	0.13	5.0	--- U	--- U	--- U	--- U	--- U
45. 1,2-Dibromo-3-Chloropropane	0.26	13.0	--- U	--- U	--- U	--- U	--- U
46. Acrylonitrile	1.49	200.0	--- U	--- U	--- U	--- U	--- U
47. trans-1,4-Dichloro-2-Butene	0.14	100.0	--- U	--- U	--- U	--- U	--- U

J = Between MDL and SWSL, U = Below ALL Quanititation Limits.

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

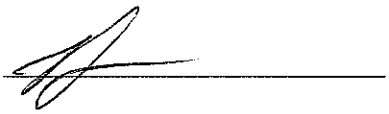
P.O. BOX 7085, 114 OAKMONT DRIVE
GREENVILLE, N.C. 27835-7085

PHONE (252) 756-6208
FAX (252) 756-0633

CLIENT: GREENE CO. LANDFILL
DAVID JONES
P.O. BOX 543
SNOW HILL, NC 28580

CLIENT ID: 6005

ANALYST: MAO
DATE COLLECTED: 03/28/08
DATE ANALYZED: 04/01/08
DATE REPORTED: 04/16/08

REVIEWED BY: 

VOLATILE ORGANICS
EPA METHOD 8260B

PARAMETERS, ug/l	MDL	SWSL	Well #8	Well #1R	Trip Blank	Equipment Blank
1. Chloromethane	0.18	1.0	--- U	--- U	--- U	--- U
2. Vinyl Chloride	0.34	1.0	--- U	--- U	--- U	--- U
3. Bromomethane	0.26	10.0	--- U	--- U	--- U	--- U
4. Chloroethane	0.29	10.0	--- U	--- U	--- U	--- U
5. Trichlorofluoromethane	0.13	1.0	--- U	--- U	--- U	--- U
6. 1,1-Dichloroethene	0.14	5.0	--- U	--- U	--- U	--- U
7. Acetone	1.21	100.0	5.40 J	4.80 J	--- U	--- U
8. Iodomethane	0.12	10.0	--- U	--- U	--- U	--- U
9. Carbon Disulfide	0.14	100.0	--- U	--- U	--- U	--- U
10. Methylene Chloride	0.14	1.0	--- U	--- U	--- U	--- U
11. trans-1,2-Dichloroethene	0.13	5.0	--- U	--- U	--- U	--- U
12. 1,1-Dichloroethane	0.16	5.0	--- U	--- U	--- U	--- U
13. Vinyl Acetate	0.20	50.0	--- U	--- U	--- U	--- U
14. Cis-1,2-Dichloroethene	0.14	5.0	--- U	--- U	--- U	--- U
15. 2-Butanone	0.85	100.0	--- U	--- U	--- U	--- U
16. Bromochloromethane	0.11	3.0	--- U	--- U	--- U	--- U
17. Chloroform	0.13	5.0	0.40 J	--- U	--- U	--- U
18. 1,1,1-Trichloroethane	0.11	1.0	--- U	--- U	--- U	--- U
19. Carbon Tetrachloride	0.13	1.0	--- U	--- U	--- U	--- U
20. Benzene	0.16	1.0	--- U	--- U	--- U	--- U
21. 1,2-Dichloroethane	0.12	1.0	--- U	--- U	--- U	--- U
22. Trichloroethene	0.13	1.0	--- U	--- U	--- U	--- U
23. 1,2-Dichloropropane	0.17	1.0	--- U	--- U	--- U	--- U
24. Bromodichloromethane	0.13	1.0	--- U	--- U	--- U	--- U
25. Cis-1,3-Dichloropropene	0.17	1.0	--- U	--- U	--- U	--- U
26. 4-Methyl-2-Pentanone	0.68	100.0	--- U	--- U	--- U	--- U
27. Toluene	0.13	1.0	--- U	--- U	--- U	--- U
28. trans-1,3-Dichloropropene	0.14	1.0	--- U	--- U	--- U	--- U
29. 1,1,2-Trichloroethane	0.20	1.0	--- U	--- U	--- U	--- U
30. Tetrachloroethene	0.16	1.0	--- U	--- U	--- U	--- U
31. 2-Hexanone	1.00	50.0	--- U	--- U	--- U	--- U
32. Dibromochloromethane	0.14	3.0	--- U	--- U	--- U	--- U
33. 1,2-Dibromoethane	0.13	1.0	--- U	--- U	--- U	--- U
34. Chlorobenzene	0.13	3.0	--- U	--- U	--- U	--- U
35. 1,1,1,2-Tetrachloroethane	0.14	5.0	--- U	--- U	--- U	--- U
36. Ethylbenzene	0.16	1.0	--- U	--- U	--- U	--- U
37. Xylenes	0.48	5.0	--- U	--- U	--- U	--- U
38. Dibromomethane	0.17	10.0	--- U	--- U	--- U	--- U
39. Styrene	0.16	1.0	--- U	--- U	--- U	--- U
40. Bromoform	0.11	3.0	--- U	--- U	--- U	--- U
41. 1,1,2,2-Tetrachloroethane	0.16	3.0	--- U	--- U	--- U	--- U
42. 1,2,3-Trichloropropane	0.06	1.0	--- U	--- U	--- U	--- U
43. 1,4-Dichlorobenzene	0.21	1.0	--- U	--- U	--- U	--- U
44. 1,2-Dichlorobenzene	0.13	5.0	--- U	--- U	--- U	--- U
45. 1,2-Dibromo-3-Chloropropane	0.26	13.0	--- U	--- U	--- U	--- U
46. Acrylonitrile	1.49	200.0	--- U	--- U	--- U	--- U
47. trans-1,4-Dichloro-2-Butene	0.14	100.0	--- U	--- U	--- U	--- U

J = Between MDL and SWSL, U = Below ALL Quanititation Limits.

Environment 1, Inc.
P.O. Box 7985, 114 Oakmont Dr.
Greenville, NC 27858

Phone (252) 756-6208 • Fax (252) 756-0633

CHAIN OF CUSTODY RECORD

CLIENT: 6005 **Week:** 10

GREENE CO. LANDFILL
DAVID JONES
P.O. BOX 543
SNOW HILL NC 28580

DISINFECTION
- ☐ CHLORINE
- ☐ UV
- ☐ NONE
- ☐ _____

SAMPLE LOCATION	COLLECTION DATE	COLLECTION TIME	TOTAL CHLORINE, mg/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	Field pH	Alkalinity	Chloride	TDS	Sulfate	Metals	Conductivity	Temperature	Field Parameter	EPA 8260B	8260 Dup. 1	8260 Dup. 2
CHLORINE NEUTRALIZED AT COLLECTION																	
pH CHECK (LAB)											L2				L2	L2	L2
CONTAINER TYPE, P/G						P	P	P	P	P	P	P	P		G	G	G
CHEMICAL PRESERVATION						A	A	A	A	A	A	A	A		E	E	E
Upstream					4	☐					☐	☐	☐		☐	☐	
Downstream	03 28 08	1035		15	4	☐					☐	☐	☐		☐	☐	
Well #4	03 28 08	0925		18	8	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Well #5	03 28 08	0940		18	8	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Well #6	03 28 08	0955		16	8	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Well #7	03 28 08	0910		17	8	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Well #8	03 28 08	0850		18	8	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Well #1R	03 28 08	1010		16	9	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Piezometer #2	03 28 08				1									☐			
Trip Blank					2										☐	☐	
Equipment Blank	03 28 08				3						☐				☐	☐	

PARAMETERS

A - NONE D - NAOH
B - HNO_3 E - HCL
C - H_2SO_4 F - ZINC ACETATE
G - NA THIOSULFATE

CLASSIFICATION:
- ☐ WASTEWATER (NPDES)
- ☐ DRINKING WATER
- ☐ DWQ/GW
- ☒ SOLID WASTE SECTION

CHAIN OF CUSTODY MAINTAINED DURING SHIPMENT/DELIVERY
(Y) N

SAMPLES COLLECTED BY: (Please Print)
Bob Hogue

SAMPLES RECEIVED IN LAB AT 0-8 °C

RELINQUISHED BY (SIG.) (SAMPLER)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
Bob Hogue	032808	[signature]	3/28/08 12:30
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME

COMMENTS:
UPSTREAM DRY AT COLLECTION

Instructions for completing this form are on the reverse side.

Sampler must place a "C" for composite sample or a "G" for Grab sample in the blocks above for each parameter requested.

FORM #5

№ 160645